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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,406	09/19/2003	Torsten Leifert	964-031480	3193

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EXAMINER

SWENSON, BRIAN L

ART UNIT	PAPER NUMBER
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3618

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/664,406	Applicant(s) LEIFERT, TORSTEN	
	Examiner Brian Swenson	Art Unit 3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 April 2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 7-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,823,280 issued to Lateur et al. in view of U.S. Patent No. 6,454,033 issued to Nathan et al.

Lateur et al. teach in Figures 1-8 and respective portions of the specification of a mobile machine, comprising: at least two electrical drive systems (12; 14); at least one electrical control system (26); and at least one electrical power source (24). Lateur et al. teaches of generating energy during deceleration (see at least Figure 5) and teaches of sensing the state of charge of a batter and of balancing the torque of a first motor/generator to balance the torque of a second motor/generator.

Lateur et al. does not explicitly teach of supplying energy from the first electrical drive to the second electrical drive rather than to an energy storage mechanism.

Nathan et al. teaches of a mobile machine that includes an electrical drive and a hydraulic drive transmission that is powered by the electrical drive. Nathan et al. teaches of a regenerative braking mode. Nathan et al. teaches of the steps of sensing the state of charge of a battery, and if the battery is at full charge, then a hydraulic pump (4) is operated (by controlling its cam plate for hydrodynamic braking) to release the energy accumulated from deceleration, see at least Col. 5, beginning line 8 and control algorithm Figure 2.

It would have been obvious to one having ordinary skill in the art at the time of invention to use a hydraulic transmission, as taught by Nathan et al. as the torque transmission (18) means in the invention taught by Lateur et al. One would be motivated to use Nathan et al.'s teachings for using a hydraulic pump, while braking when a battery is at full charge, to prolong the lifespan of the battery in the invention taught by Lateur et al. The incorporation of a hydraulic transmission would further provide the advantage of allowing the output gear ratio to be adjusted allowing for the vehicle to operate at an optimal efficiency

In regards to claim 2, Lateur et al. teaches the motor generator (15) is connected to power controller (16), which is connected with storage cell (24) and is configured to absorb energy during regenerative braking.

In regards to claim 3, see Figure 5 and Col. 7, lines 60 through Col. 8 of Lateur et al. where the recharging mode is taught.

In regards to claims 4-5 and 12-13, the hydraulic system in the invention taught by Lateur et al. and as modified by Nathan et al. is activated when the battery is fully charged to absorb energy.

In regards to claim 9 and 14, Lateur et al. teaches of electrical power source includes a heat engine (22; combustion engine (Col. 1, line 5) with a connected generator (12).

In regards to claim 10, Lateur et al. states in the technical field (Col. 1, heading) that the invention relates generally to electric vehicles and electric fuel powered vehicles but does not specifically state if the vehicle is an industrial truck. It would have been obvious to one having ordinary skill in the art at the time of invention to use the vehicle structure, disclosed by Lateur et al. and as modified by Nathan et al., in an industrial truck, as industrial trucks are well-known to utilize hybrid electric drive structure.

In regards to claims 8 and 11, Lateur et al. states that a source of electrical energy, e.g., a battery pack is provided (see at least Col. 2, lines 42) but does not teach of using a high-capacity capacitor or a fuel cell. It would have been obvious to one having ordinary skill in the art at the time of invention to use a capacitor or a fuel cell as both are well-known energy storage cells in the hybrid electric vehicle art and would be an obvious choice for a worker having ordinary skill in the art based on their availability.

3. Claim 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lateur et al., in view of Nathan et al. as disclosed above, and in further view of U.S. Patent No. 4,278,298 issued to Sauka et al.

Lateur et al. as modified by Nathan et al. disclose the claimed invention except for teaching of a pressure-reducing valve for hydrodynamic braking.

Sauka et al. teach of a system for utilizing dynamic and hydraulic braking, including teaching of a pressure reducing valve (27) that dissipates energy of drive shaft (9) by converting it to thermal energy by mechanical brake (20). It would have been obvious to one having ordinary skill in the art at the time of invention to provide a pressure reducing valve (27), as taught by Sauka et al., actuated by the pressure sensor (45; Nathan et al.) in the invention taught by Lateur et al. as modified by Nathan et al. to provide the advantage of hydrodynamic braking relieving dependence on mechanical friction brakes.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Lateur et al. as modified by Nathan et al. disclose the claimed invention except for teaching of a pressure-reducing valve for hydrodynamic braking.

Sauka et al. teach of a system for utilizing dynamic and hydraulic braking, including teaching of a pressure reducing valve (27) that dissipates energy of drive shaft (9) by converting it to thermal energy by mechanical brake (20). It would have been obvious to one having ordinary skill in the art at the time of invention to provide a pressure reducing valve (27), as taught by Sauka et al., actuated by the pressure sensor (45; Nathan et al.) in the invention taught by Lateur et al. as modified by Nathan et al. to provide the advantage of hydrodynamic braking relieving dependence on mechanical friction brakes.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

As disclosed above, Lateur et al. as now modified by Nathan et al. disclose the claimed invention, including teaching a mobile machine with first and second electric drive sources and a hydraulic transmission. Nathan et al. teaches of regenerative braking and teaches of a mode of operation where the hydraulic transmission is controlled when a power source is fully charged (beginning Col. 4, line 57 of Nathan et al.). In the modified invention braking can be effected by operation one of the electrical drive sources as a generator and the other as a motor to operate the hydraulic transmission as a hydraulic brake by controlling the cam plate for the hydraulic transmission.